EXCEL 2007: PIVOT TABLES & PIVOT CHARTS

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Description: If you have lists of data in Excel and need to better understand or present the data, an Excel PivotTable may be the tool you need. With pivot tables, you can easily summarize vast amounts of data by date or other groupings, combine and compare data in a table, and rotate (pivot) the table's rows and columns to see different summaries in a flash. In this session, you'll learn how to:

- Create pivot tables using the PivotTable Wizard
- Modify a pivot table
- AutoFormat a pivot table
- Apply conditional formatting
- Create a pivot chart
- Change the summarization method for table data
- Modify pivot table field names
- Create separate pivot tables for each of the values in a column

You've heard of pivot tables – maybe you've even tried to create one, but needed help to be successful. When you leave this session, you will be able to create and use a pivot table to answer critical questions about your organization.

UNDERSTANDING PIVOT TABLE AND PIVOT CHART REPORTS

A **pivot table report** summarizes the columns of information in a database in relationship to each other. A **pivot chart** is the graphical representation of a pivot table. When you need to present thousands of rows of data in a meaningful fashion, you need a pivot table.

Tree Sales Summary

Quantity	County				
Type	Genesee	Kalkaska	Lake	Oakland	Grand Total
Blue Spruce	12,500	13,500	73,500	22,500	122,000
Concolor Fir	20,000	10,000	12,000	13,500	55,500
Frazier Fir	6,500	7,500	14,500	15,000	43,500
Scotch Pine	41,000	-	-	11,000	52,000
White Pine	37,000	-	58,500	15,500	111,000
Grand Total	117,000	31,000	158,500	77,500	384,000

Figure 1: an Excel Pivot Table Report summarizing sales data.
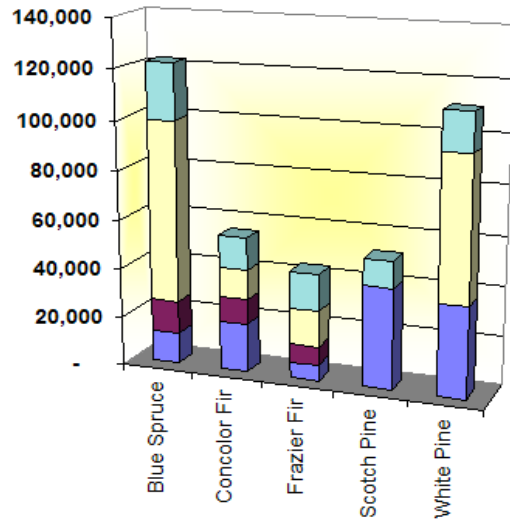
Tree Orders by County and Type

Not all databases are good candidates for pivot table analysis. Databases contain many different types of information. Pivot tables focus on two broad types of entries:

- **Data fields** that can be summarized like Quantity, Total Cost, Miles Driven.

- **Text fields** that label or describe the data such as Salesperson, Customer, City and Sales Territory.

Figure 3: Text fields and data fields in the Excel list.

	A	B	C	D	E	F
2	**County Cooperative Tree Orders**					
3						
4	*Month*	*County*	*Type*	*Quantity*	*Bundles*	*Cost*
5	Jan-08	Genesee	Blue Spruce	$12,500.00	$ 25.00	17,475
6	Jan-08	Oakland	Blue Spruce	22,500.00	45.00	31,455
7	Jan-08	Oakland	Concolor Fir	13,500.00	27.00	16,173
8	Jan-08	Genesee	White Pine	37,000.00	74.00	44,326
9	Jan-08	Oakland	White Pine	15,500.00	31.00	18,569
10	Feb-08	Lake	Blue Spruce	42,500.00	85.00	59,415
11	Feb-08	Genesee	Frazier Fir	6,500.00	13.00	7,787
12	Feb-08	Oakland	Scotch Pine	11,000.00	22.00	13,178
13	Feb-08	Lake	White Pine	32,000.00	64.00	38,336
14	Mar-08	Kalkaska	Blue Spruce	13,500.00	27.00	18,873
15	Mar-08	Kalkaska	Concolor Fir	10,000.00	20.00	11,980
16	Mar-08	Lake	Concolor Fir	12,000.00	24.00	14,376
17	Mar-08	Lake	Frazier Fir	14,500.00	29.00	17,371
18	Mar-08	Genesee	Concolor Fir	20,000.00	40.00	23,960
19	Mar-08	Oakland	Frazier Fir	15,000.00	30.00	17,970
20	Apr-08	Genesee	Scotch Pine	41,000.00	82.00	49,118
21	Apr-08	Lake	Blue Spruce	31,000.00	62.00	43,338
22	Apr-08	Kalkaska	Frazier Fir	7,500.00	15.00	8,985
23	Apr-08	Lake	White Pine	26,500.00	53.00	31,747

Text fields   **Data fields**

CREATING A PIVOT TABLE USING THE WIZARD

Use the PivotTable and PivotChart Wizard to create an Excel pivot table. Select any cell in the database, and choose Data ➢ PivotTable and PivotChart Report to launch the wizard.

STEP 1: IDENTIFYING THE DATA SOURCE AND THE TYPE OF REPORT

In the first step of the wizard, select the type of data you want to work with:

- data in an Excel database
- data from an external source like Microsoft Access
- data that you want to consolidate from several worksheets or sources
- an existing PivotTable

Basing a PivotTable on an existing PivotTable results in a leaner file. Specify whether you want a pivot table or a pivot table with a pivot chart.

STEP 2: VERIFYING THE DATA RANGE

In the second step of the wizard, verify the range of the database. If there is no range selected, or if the range is incorrect, select the correct range before clicking the Next button.

STEP 3: LAYOUT AND DESTINATION

In the third step, specify the destination, layout, and options. The default destination is a new worksheet. To place the pivot table in an existing worksheet, click Existing Worksheet. Identify a cell address for the upper-left corner of the pivot table. Click Finish to create the Pivot Table.

CHANGING PIVOTTABLE LAYOUT

When you complete the wizard, Excel displays the pivot table, and the Pivot Table Field List. A pivot table contains four areas.

THE ROW AND COLUMN AREAS

Place text fields you want to compare in the Row and Column areas. For example, you might want to compare sales regions by month, or classes by quarter. When you drop a field, Excel examines the data source. Each unique entry becomes a row or column heading—an item—in the pivot table.

THE FILTER (PAGE) AREA

While you can filter items in the Row area and Column area, the Page area is used specifically to filter the pivot table. If you need to create separate reports for values in a specific column, place it in the Page area.

THE DATA AREA

Information in the Data area will be summarized, so numeric fields are generally placed there. If you place a text field in the Data area, you can only COUNT the number of entries for each column and row.

As you add a field to the Data area, Excel indicates the default summary type for the data. SUM is the default for values; COUNT is the default for columns that contain text entries, dates, or times.

TIP: If a column of numbers includes even one text entry, you can't use SUM. You are limited to the only summary function that applies to text: COUNT. In Excel you should never use text values like None or NA to indicate the absence of a value. Use Replace (Edit > Replace) to replace text entries like NA with blanks; simply leave the Replace With textbox blank.

REMOVING AND ADDING PIVOT TABLE FIELDS

You can change the layout of an existing pivot table by dragging a field button to another area. To remove a field from the pivot table, drag the field button out of the pivot table area. A large X appears on the button. Release the mouse button to drop and delete the field. To add a field to the pivot table, drag a button from the Field List into the appropriate area.

TIP: You can rename fields in your pivot table. Click the field button, overtype the name in the formula bar, and press Enter. You can't use any name that's used as a field name in your database.

FILTERING ITEMS

To filter data displayed in the pivot table, click the filter drop-down arrow on the field button for the field you wish to filter. This opens a list of items in the field. Select the items you want to display, and then click OK to close the list and filter the pivot table. Do you want to include this filtered table in a report you're creating in Word? Select and copy the filtered pivot table. Open the Word document and place your insertion point where you want to place the pivot table. Click Paste to embed the pivot table in the Word document. Click anywhere in the pivot table to turn on the Excel toolbars so you can format the table.

GROUPING ITEMS

Grouping combines items, and is usually used for date fields to combine them into months or years. To group a field, right click the field and choose Group and Outline ➢ Group from the shortcut menu to open the Group and Outline dialog box.

The list box in the Group and Outline dialog box is a multi-pick list; choose Month if you want to group by month regardless of year (like employee hire dates or birthdays). Choose both Month and Year, as shown at right, if the same month in different years should be separate entries.

Double-click any nonzero value in the Data area, and Excel opens a new worksheet and displays the records that are summarized in that cell of the pivot table report:

TIP: If you can't drill down in a worksheet, the option is disabled in the Table Options dialog box. You can disable the drill down option when you want to present aggregate data — for example, employee attendance or student test scores —while keeping the details about individual employees or students confidential.

CHANGING THE SUMMARY AND FORMAT FOR DATA FIELDS

To change the type of summary, click the Field Settings button on the PivotTable toolbar or double-click the Data field button (not a value, but the button at the upper left corner of the table) to open the PivotTable Field dialog box. Choose the type of summary you want to use from the list box.

The default number format in a pivot table is General. Click the Number button in the Pivot Table Field dialog box to change formats, or use the Formatting toolbar and Format Cells dialog box to format the completed pivot table.

TIP: You might wonder "Why don't I just select the cells and format them?" You can, but formatting will be removed the next time you refresh the data in the pivot table. Unless you want practice formatting in Excel, use the Pivot Table Field dialog box and format the field.

SETTING PIVOT TABLE OPTIONS

Pivot tables are constructed objects. Unlike a regular worksheet, pivot table rows and columns are created and populated based on settings. The PivotTable Options dialog box is anything but optional. Right-click anywhere in the pivot table and choose Table Options to open the dialog box. Two frequently changed options are the grand totals and the empty cells options. Enable the Empty Cells checkbox to suppress the automatic display of zeros for empty pivot table cells.

APPLYING AN AUTOFORMAT

There are twenty-two different AutoFormats designed specifically for pivot tables. The first ten AutoFormats (Report 1 - Report 10) are indented formats designed to resemble traditional printed database reports. These PivotTable Reports look very little like pivot tables, and a lot like reports you'd spend a fair amount of time creating and formatting in a reporting tool like Business Objects or Crystal Reports.

To apply an AutoFormat, right click on the pivot table and choose Format Report from the shortcut menu or choose a format from the Design tab of the ribbon.
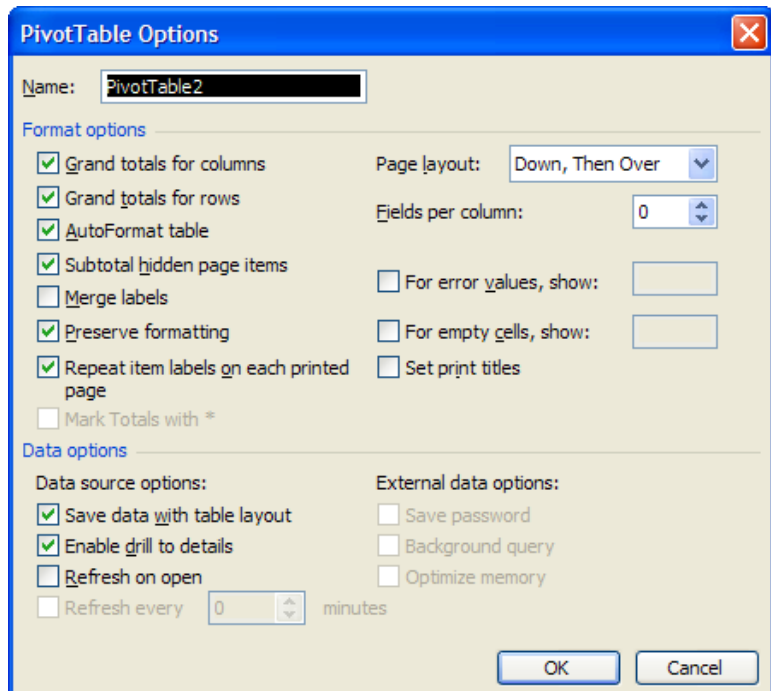
KEEPING THE PIVOT TABLE UPDATED

A pivot table is dynamically linked to the database used to create the table. If you edit values within the database, simply click the Refresh Data button on the ribbon and Excel will update the pivot table to reflect the database changes.

However, if you add columns to the database or add rows of data at the bottom of the database, you cannot simply refresh the data. You must return to the Pivot Table and PivotChart Wizard and identify the new range of records that should be included in the table. If you don't, the pivot table values won't include the added data.

CREATING A PIVOTTABLE WITH OTHER DATA

You can create a PivotTable with any data you can get into your workbook, including data from another Excel workbook, SQL Server, a web page, Access, SharePoint, or other data sources. You use Microsoft Query to access external data and display it in Excel.

1. In the first step of the Wizard, choose External Data Source then click Next.

2. In the second step of the Wizard, click the Get Data button to open the Choose Data Source dialog box.

3. If your data source exists, select it then click OK. If the source does not exist, choose the source type from the list on the Database tab then click OK.

The next screens you'll see depend on your data source. When you have finished entering information, you'll end up in Microsoft Query. If you will be using this data set in the future, click the Save Query button to name and save your query. In the future, the query will appear on the Queries tab of the Choose Data Source dialog box.

CREATING A PIVOTCHART

There are two ways to create a pivot chart:

1. In the first step of the Wizard, choose Pivot Chart Report (with Pivot Table Report), or

2. Select an existing pivot table and click the Chart button on the ribbon.

After the chart is created, you can format the chart using the commands on the Chart menu. Manipulate the chart as you would the pivot table: by dragging field buttons to the Data, Axis, and Legend areas of the chart, or using the task pane.

ETCETERA

This is just the beginning of what you can do with Excel PivotTables. You can add calculated fields, create custom calculations, create a separate pivot table for each department or time period in three easy steps…the list is quite long. For more information look up Pivot Table in Excel help or visit the Microsoft Office web site.